The Conversion Electron Spectrum of the Dysprosium Fraction

S/048/60/024/007/013/032/XX
B019/B056

ASSOCIATION: Nauchno-issledovatel'skiy fizicheskiy institut, Leningradskogo gos. universiteta im. A. A. Zhdanova (Physical Scientific Research Institute of Leningrad State University imeni A. A. Zhdanov). Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

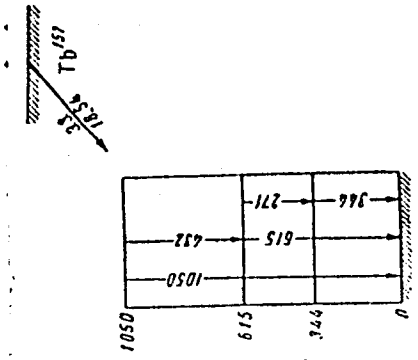

Рис. 3. Схема распада $Tb^{157} \rightarrow Gd^{157}$

Таблица 1

Конверсионные электроны Dy^{155}

1) E_{e^-}, keV	2) E_γ, keV	3) T, час	4) Относит. интенсивн. (эксп.)	5) Идентификация
28,8	80,8	7±2		*K*-81
47,4	99,4	7,5±1,0	200±60	*K*-99
72,8	81,1	8,5±1,5	200±60	*L*-81
79,9	81,9	8,5±1,5	70±20	*M*-81
90,7	99,4	8±2	50±15	*L*-99
95,7	97,7	8±2	40±10	*M*-99 и *K*-147?
138,4	147	6±1	25±6	*L*-147?
191,9	244	6±1	40±6	*K*-244
203,1	255	5±1	100	*K*-255
237,4	245	6±2	4±2	*L*-244
246,8	255	6±1	13±3	*L*-255

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Таблица 2

Конверсионные электроны Tb^{155}

E_{e^-}	E_γ	Относит. интенсивн. (эксп.)	Идентификация
243,7	344	100	*K*-344*
338,2	344	30±3	*L*-344*
382	412	4±2	*K*-412
382	432	23±5	*K*-432*
404	412	Оч. слаб.	*L*-412
425	433	4±2	*L*-432
536	586	8±2	*K*-586*
565	615	40±5	*K*-615*
609	617	7±2	*L*-615
1000	1050	Оч. слаб.	*K*-1050?

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B019/B056

24.6720

AUTHORS: Voinova, N. A., Dzhelepov, B. S., and Zhukovskiy, N. N.

TITLE: The γ Emission of Zr^{95}_{79} + Nb^{95}_{79}

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 7, pp. 850-851

TEXT: This paper was read at the 10th All-Union Conference on Nuclear Spectroscopy, which took place from January 19 to January 27, 1960 at Moscow. The investigations were carried out by means of an elotron under standard conditions (Ref. 1); as source 5 g of $Zr(SO_4)_2$ was used, which was produced from fission products. In the source, Zr^{95} and its daughter product Nb^{95} were nearly in equilibrium. In Fig. 1, the spectrum of the recoil electrons is represented. In the energy range of from 100 to 1200 kev only two lines (720 $\pm$ 5 and 762 $\pm$ 2 kev) were observed. The first line belongs to Zr^{95}. According to data obtained by other authors, two lines should be present within the range of the second line, at 757 and 767 kev. The values obtained by the authors permit no separation of the

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The γ Emission of Zr^{95} + Nb^{95}

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762 ± 2 kev line. The intensity ratio of the two lines determined here is 0.14±0.02. In the energy range of from 100 to 720 kev no lines could be found. Should any lines, however, exist there, their intensity must be less than 0.6% of the intensity of the 762 kev line. The highest possible intensity of any line existing above 770 kev can be 0.5% of the intensity of the 762 kev line. There are 1 figure and 13 references: 2 Soviet, 9 US,

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR (Radium Institute imeni V. G. Khlopin of the Academy of Sciences, USSR)

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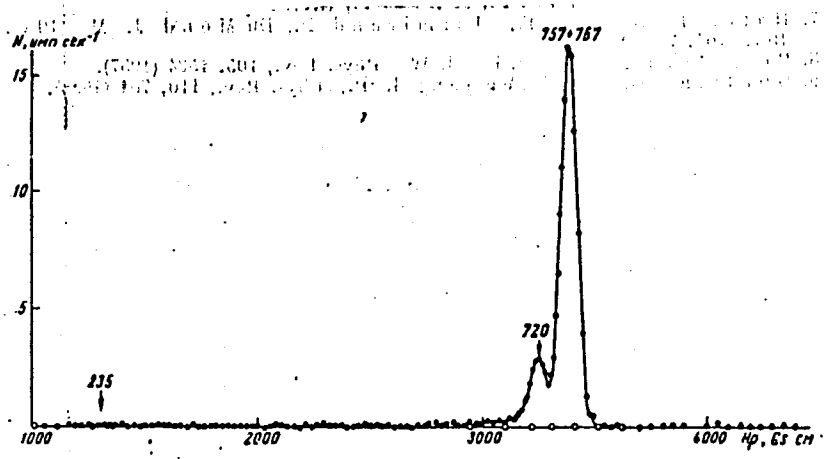

Спектр электронов отдачи от γ-лучей $Zr^{96} + Nb^{93}$

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B019/B056

24.6720

AUTHORS: Voinova, N. A., Dzhelepov, B. S., Zhukovskiy, N. N., and Khol'nov, Yu. V.

TITLE: The γ-Emission of Tb^{160} 19

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 7, pp. 852-857

TEXT: This paper was read at the 10th All-Union Conference on Nuclear Spectroscopy, which took place from January 19 to January 27, 1960 at Moscow. The γ-emission of Tb^{160} was investigated by means of two γ-spectrometers, which evaluate the recoil electrons of the rytron and the elotron; their source was 0.146 g terbium oxide with an activity of roughly 800 millicuries. By means of the rytron, the spectrum was investigated according to the photoelectrons within the energy range from 80 to 300 kev; as a converter, a bismuth target was used. From 200 to 1700 kev the spectrum was investigated according to the recoil electrons under conditions that are normal for a rytron and an elotron. In Fig. 1 the photoelectron spectrum, obtained by means of the rytron, in Fig. 2 the recoil electron

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spectrum, obtained by means of the elotron, and in Fig. 3 the recoil electron spectrum, obtained by means of the rytron is shown. In the Table, the energies and the relative intensities of the lines obtained by the authors are given. In the first column of the Table, the lines are numbered, in the second, the energies are given in kev, and in the third column the relative intensities (elotron, recoil electron), in the fourth column the relative intensities (rytron, recoil electron), and in the fifth column the relative intensities (rytron, photoelectron) are given. In the further columns, values obtained by Ye. Grigor'yev et al. (Ref. 4), Bäckström (Ref. 3), Jaffé (Ref. 6), Thiry (Ref. 7), Nathan (Ref. 8), Clark and Knowles (Ref. 9), Ofer (Ref. 10), and Clark (Ref. 11) are given. All lines measured are in the decay scheme of Tb^{160} shown in Fig. 4. There are 4 figures, 1 table, and 11 references: 3 Soviet, 4 US, 2 British, 1 Canadian, and 1 Swedish.

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S/048/60/024/007/032/032/XX
B019/B056

24.6600

AUTHORS: Vitman, V. D., Dzhelepov, B. S., Pavlov, A. A., Semenov, S.V., and Shestopalova, S. A.

TITLE: The Determination of the Ratio of the Number of Quanta of Roentgen K- and L-Emission of Some Neutron-deficient Isotopes

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 7, pp. 934-938

TEXT: This paper was read at the 10th All-Union Conference on Nuclear Spectroscopy, which took place from January 19 to January 27, 1960 at Moscow. By means of a proportional counter, the relative intensities of the K- and L-emissions of Ho^{160}, Dy^{159}, Nd^{140} + Pr^{140}, and Sm^{145} were measured. The rare earths, from which the sources were chromatographically separated, were obtained by the authors by irradiating a target with 660-Mev protons on the synchrocyclotron of the OIYaI. The entire experimental arrangement was calibrated on Zn^{65}, Se^{75}, In^{114}, Cs^{137}, and Sm^{145}. the relative halfwidths of the lines were 15 - 12%. The ratio of the

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The Determination of the Ratio of the Number of Quanta of Roentgen K- and L-Emission of Some Neutron-deficient Isotopes

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B019/B056

numbers of L- and K-emission quanta is put proportional to the ratio of the area of the lines measured: $N_L/N_K = kS_L/S_K$. For the purpose of determining the background, a filter made of 0.8 mm cadmium, 0.5 mm copper, and 0.5 mm aluminum was used, from which quanta up to 60 kev were completely absorbed and quanta with more than 200 kev were allowed to pass. The results are given in Table 1. Column 2 gives S_L/S_K, in columns 3 and 4 the counter efficiencies for K- and L-radiations are given. Column 8 then gives the values N_L/N_K. By means of these values, the ratios between the electron captures on L- and K-shells are calculated. These values are given in Table 2. It is, however, pointed out that they contain a considerable error. There are 1 figure, 2 tables, and 8 references: 4 Soviet, 3 US, and 1 Dutch.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleyeva (All-Union Scientific Research Institute for Metrology imeni D. I. Mendeleyev)

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83671

S/048/60/024/009/004/015
B013/B063

24.6720

AUTHORS: Baranov, V. I., Gromov, K. Ya., Dzhelepov, B. S., Zyong Chong Bay, Malysheva, T. V., Morozov, V. A., Khotin, B. A., Chumin, V. G.

TITLE: The New Isotopes Ir^{184} and Pt^{187}

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960, Vol. 24, No. 9, pp. 1079 - 1082

TEXT: The spectrum of the conversion electrons of the iridium fraction was analyzed by means of a β-spectrometer of the type Danish. This fraction is formed during the disintegration of gold bombarded with 660-Mev protons. Radiochemically pure iridium without carriers was separated from a bombarded gold plate weighing 1 ÷ 2 g (Ref. 1). The spectrum of the Ir conversion electrons showed some lines with a half-life of 3.1 ± 0.3 hours. These were identified as L-120; M-120; K-264; L-264; M-264; K-391 and L-391 transitions. Experimental data on these lines are collected in Table 1. The measured iridium spectrum (Series I) is shown in Fig. 1a, part of which is shown in a higher resolution in Fig. 1b. In addition, the L-, M-, and N-lines of the

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83671

The New Isotopes Ir^{184} and Pt^{187}

S/048/60/024/009/004/015
B013/B063

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo Akademii nauk SSSR (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy of the Academy of Sciences USSR)
Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

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S/020/60/135/003/015/039
B019/B077

AUTHORS: Grigor'yev, Ye. P. and Dzhelepov, B. S., Corresponding Member of the AS USSR

TITLE: The Ho^{156} Decay

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 3, pp. 564-567

TEXT: The authors examined with a β spectrometer with a double focusing to an angle of $\pi\sqrt{2}$ the conversion spectrum of the radioactive Ho^{156} which has a half-life of 56 minutes. The authors produced the Ho^{156} isotope by bombarding tantalum with 660-Mev protons in the synchrocyclotron of the Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research). The Ho fraction was obtained through chromatographic separation of rare earths. The aim of the work was the more exact determination of the transition energies, the determination of the multiplicity and the plotting of the Dy^{156} level scheme. The exact half-life for the 366,7-kev transition was found to be 57 ± 3 minutes. Using the nuclear resonance the transition energy could be determined to an accuracy of

The Ho^{156} Decay

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0.05 - 0.10 %. Fig. 1 shows the level scheme as obtained from the test results. An extended discussion of the scheme points out the differences between the Bohr-Mottelson theory and the level schemes of neighboring isotopes The authors thank V. A. Khalkin and I. A. Yutlandov for the separation of the Ho fraction. A. S. Basin, K. Ya. Gromov, N. A. Bonch-Osmolovskaya, B. S. Dzhelepov, O. Ye. Kraft, Chzhou Yuye-Va, and A. V. Kalyamin are mentioned. There are 1 figure, 3 tables, and 5 references: 4 Soviet and 1 US.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov). Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR (Radium Institute imeni V. G. Khlopin, Academy of Sciences, USSR

SUBMITTED: July 27, 1960

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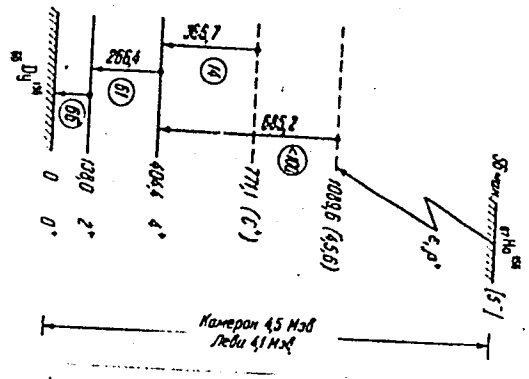
B019/B077



Card 3/3

L 13174-66 EWT(m) DIAAP

ACC NR: AP6001142 SOURCE CODE: UR/0367/65/002/003/0393/0401

AUTHOR: Vitman, V. D.; Volnova, N. A.; Dzhelepov, B. S.

ORG: Physics-Technical Institute im. A. F. Ioffe, Academy of Sciences, SSSR (Fiziko-tekhnicheskiy institut Akademii nauk SSSR); Institute of Metrology im. D. I. Mendeleyev (Institut metrologii)

TITLE: Determination of the intensity and multipolarity of high-energy gamma-transitions accompanying Ta^{182}-decay

SOURCE: Yadernaya fizika, v. 2, no. 3, 1965, 393-401

TOPIC TAGS: tantalum, radioactive decay, radioactive decay scheme, gamma transition, multipole order

ABSTRACT: The authors present data and discuss precise measurements of the intensities of gamma-transitions of Ta^{182} with energies above 900 kev performed at an installation of VNIIM. The source used was tantalum activated with neutrons at the FTI reactor (source activity amounted to about 12 curie). A total of 20 transitions were observed. Determinations were made of multipolarities, and in some cases of a mixture of different polarities. Multipolarities of transitions with the energy of 1342; 1372; 1386; 1410; (1435); and 1453 kev were determined for the first time. The W^{182} level scheme is discussed. The following quantum characteristics were ascribed to excited levels of W^{182}: K, I^{π}: 0.2^+ (1222); 0.2^+ (1258); 2.2^- (1289); 2.3^+ (1331); (1), 0^+ (1410), and $I^{\pi}=2^-$ (1435). These characteristics were

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ACC NR: AP6001142

ascribed on the basis of analyses of the work performed. It is noted that the data obtained do not contradict the values of $I^{\pi} = 4^{-}$ for the levels 1488 and 1554 kev, and $I^{\pi} = 4^{+}$ for the 1443 kev level. Authors use this opportunity to express their sincere gratitude to A. I. Medvedev of VNIIM for his help in the measurements, and to V. M. Mikhaylov of LGU for valuable advice and discussion of the results. Orig. art. has: 2 figures and 3 tables.

SUB CODE: 20, 18/ SUBM DATE: 28Dec64/ ORIG REF: 010/ OTH REF: 006

Card 2/2

DZHEVUL'SKIY, V. A., and KUDRYASHEV, L. I.

"On the Proof of the Thermal Regularity Existance in a Boundary Layer at Regularity in a Turbulent Nucleus of a Flow and Vice Versa."

Report submitted for the Conference on Heat and Mass Transfer, Minsk, BSSR, June 1961.

DZHELEPOV, Boris Sergeyevich

Decay schemes of radioactive nuclei, by B.S. Dzhelepov and L.K. Peker. New York, London, Pergamon Press, 1961.
786 p. diagrs.
Translated from the original Russian: Skhemy raspada radioaktivnykh yader, Moscow, 1958.
Includes references.

33114

S/638/61/001/000/041/056
B108/B138

24.6310

AUTHORS: Abdurazakov, A. A., Gromov, K. Ya., Dzhelepov, B. S., Umarov, G. Ya., Yutlandov, I. A.

TITLE: Conversion electron spectra of neutron-deficient thulium isotopes

SOURCE: Tashkentskaya konferentsiya po mirnomy ispol'zovaniyu atomnoy energii. Tashkent, 1959. Trudy. v. 1. Tashkent, 1961, 259-262

TEXT: A study was made of the conversion electron spectra of thulium obtained by 660-Mev proton bombardment of tantalum. The spectra were recorded on a beta-spectrograph in uniform magnetic field. The three exposure times were 9 hrs, 14.5 hrs, and 20 hrs. Conversion lines of Tu^{165}, Tu^{166}, and Tu^{167} were observed. Besides this a number of new lines were found (Table 2) which are due to a thulium isotope with a half-life of less than 7 hrs. According to Mihelich et al. (Refs. 2, 3, see below) this isotope might be Tu^{163} with a half-life of 2 hrs. Preliminary experiments on a magnetic spectrometer with a Geiger counter seem to

Conversion electron spectra ...

confirm this assumption since several of the conversion electron lines observed (156, 203.4, 94.7, 98.4, 102.4, and 133 kev) are appropriate for a half-life of 2 hrs. V. G. Chumin, I. S. Dneprovskiy, L. N. Ignatyuk, and A. A. Balishev are thanked for help and advice. There are 1 figure, 2 tables, and 3 references: 1 Soviet and 2 non-Soviet. The reference to the English-language publications read as follows: Ref. 2: Mihelich I. W. et al. Phys. Rev., 108, 989, 1957; Ref. 3: Mihelich I. W. et al. Paps, 3, 358, 1958.

ASSOCIATION: Sredneaziatskiy politekhnicheskiy institut (Soviet Central Asia Polytechnic Institute)

Table 2. New conversion electron lines from thulium isotopes.
Legend: (1) conversion lines; gamma transition energies whose identification is not completely reliable are given in parentheses.

Hp	Conversion lines (1)	E_γ
747,0	K 101,38	46,90
840,0	(K 116,15)	58,67
957,0	L 84,8	75,01
995,5	—	80,74
1006,0	M 84,8	82,34
1086,5	L_1 104,38	94,91
1089,0	L_{II} 104,38	95,36
1109,0	—	98,61
1133,0	M 104,38	102,57
1161,5	(L 116,15)	107,33
1307,3	(K 190,43)	132,95
1430,5	K 213,45	155,97
1563,5	L 190,43	182,37
1571,5	K 241,47	183,99
1650,5	—	202,34
1666,0	K 213,45	203,49
1734,0	—	217,88
1798,0	L_1 241,47	231,69
1803,5	L_{III} 241,47	232,89

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89251

S/048/61/025/001/017/031
B029/B060

26.2246

AUTHORS: Dzhelepov, B. S., Khol'nov, Yu. V.

TITLE: Photorhytron

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 1, 1961, 98-105

TEXT: A study has been made of the applicability of the rhytron in the range of smaller energies. The rhytron dealt with here is a magnetic gamma spectrometer of the Radiyevyy institut (Radium Institute). In the spectra of a great number of isotopes there are, in fact, many gamma lines in the very range of low energies. The main problem discussed is the determination of such conditions as are required if the photoeffect shall be used with any advantage. While a large cross section of the photo-effect augments the spectral sensitivity, there are several factors acting against this. The device used, which the authors had earlier worked out (Ref. 1), is illustrated in Fig. 1. A 50 μ thick cellophane cover was mostly used as a target when working with recoil electrons. Lead and

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bismuth targets served for the experiments with photoelectrons. The spectrum of the photoelectrons ejected by gamma rays with $h\nu$ = 122, 244, and 345 kev was examined with three targets: Pb(13.5 mg cm^{-2}), Bi(7.5 mg cm^{-2}), and Bi(3.7 mg cm^{-2}). Figs. 2, 3, 4 illustrate the respective results. The three lines L122, K244, and K345 are clearly visible. Figs. 3 and 4 show the relative half-width of the lines on the peak height (above the "Compton" tail) as a function of the thickness of the target. The authors selected a thickness of the bismuth target at which the efficiencies of the rhytron working with photoelectrons and Compton electrons are about the same in the ~350-kev energy range. The following section of the present article deals with the form of spectral lines. Fig. 5 shows the spectra of electrons ejected by gamma rays with the energies 100(Sm^{153}), 145(Ce^{141}), 190(In^{114}), 280(Hg^{203}), 411(Au^{198}), and 660 kev (Cs^{137}). Fig. 6 shows the dependence of the relative half-width of K and L lines and, for a comparison, the same curve for the Compton lines. The considerable improvement of resolution in the case of the photorhytron is evident. Fig. 7 shows the dependence of the K/L ratio upon the energy of the gamma quanta. The following two sections deal with

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Photorhytron

the energy calibration of the spectrometer and the more difficult intensity calibration. The energy of gamma quanta can be determined within an accuracy of ~0.5. The application of the device under new experimental conditions is illustrated in Fig. 10 by the example of the spectrum taken thereby of photoelectrons ejected by the gamma rays of Tb. The use of photoelectrons in the rhytron made it possible to (1) extend the working range of this gamma spectrometer considerably, namely, up to a ~60-kev energy of gamma rays; (2) highly improve the resolution of the device at low energies; (3) improve the ratio height of photopeaks/Compton background as compared with other spectrometers making use of photoelectrons. Ye. A. Kholnova and the students A. Ushakova, V. Rumyantsev, Ye. Vinogradova, as well as E. Arutyunyan and G. Shchukin are thanked for their help in the measurements. The article under consideration is the reproduction of a lecture delivered at the 10th All-Union Conference on Nuclear Spectroscopy which took place in Moscow from January 19 to 27, 1960. There are 10 figures and 3 Soviet-bloc references.

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B029/B060

Photorhytron

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR (Radium Institute imeni V. G. Khlopin, Academy of Sciences, USSR)

Legend to Fig. 1:
S - gamma ray source,
1) window, 2) target,
3) cut, 4) and 5) main slits, 6) and 7) counters,
8) additional slit,
9) fitting for evacuation,
10) rear wall of device,
11) and 12) shielding blocks, 13) collimator.

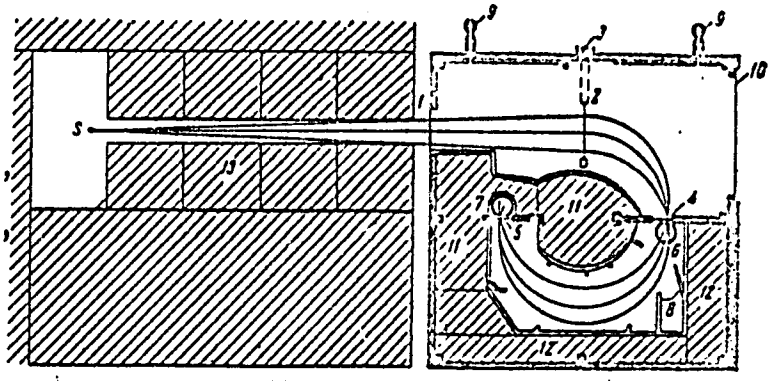

Fig. 1

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Photorhytron

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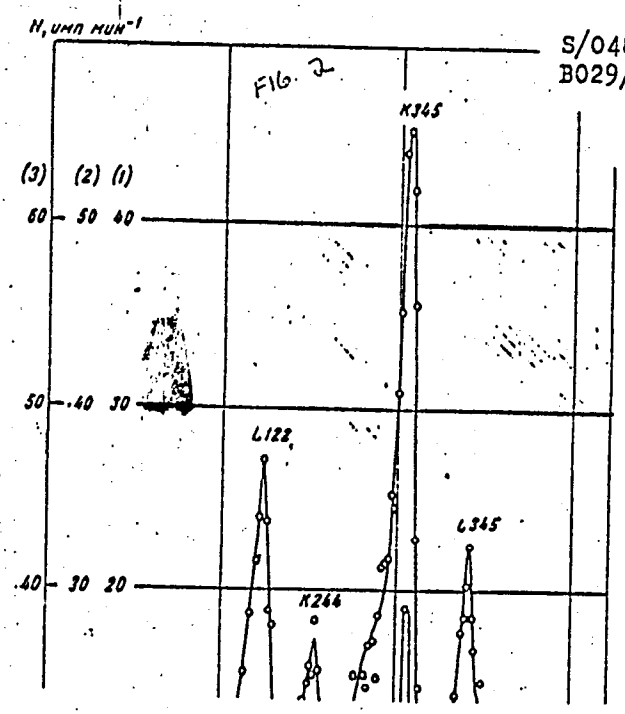
FIG. 2



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Photorhytron

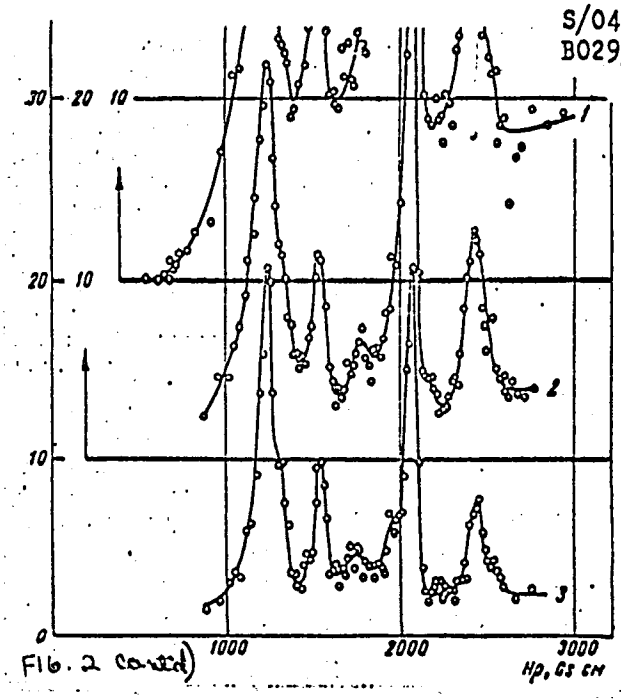

Fig. 2 (contd)

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B029/B060

Photorhytron

Fig. 3

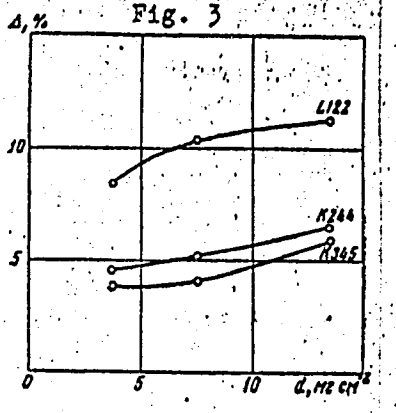

Рис. 3. Зависимость относительной полуширины линий фотоэлектронов $Eu^{152+154}$ Δ от толщины конвертера d

Fig. 4

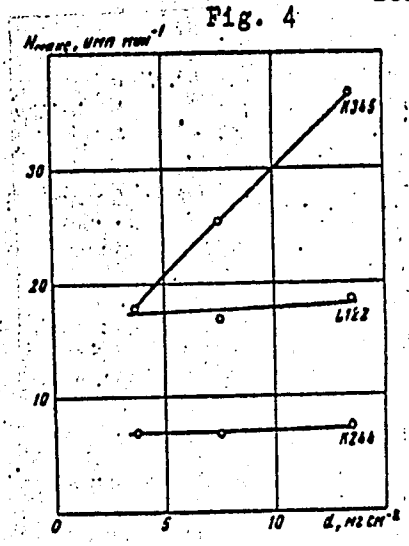

Рис. 4. Зависимость скорости счета на пике мягких фотоэлектронных линий $Eu^{152+154}$ от толщины конвертера

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Photorhytron

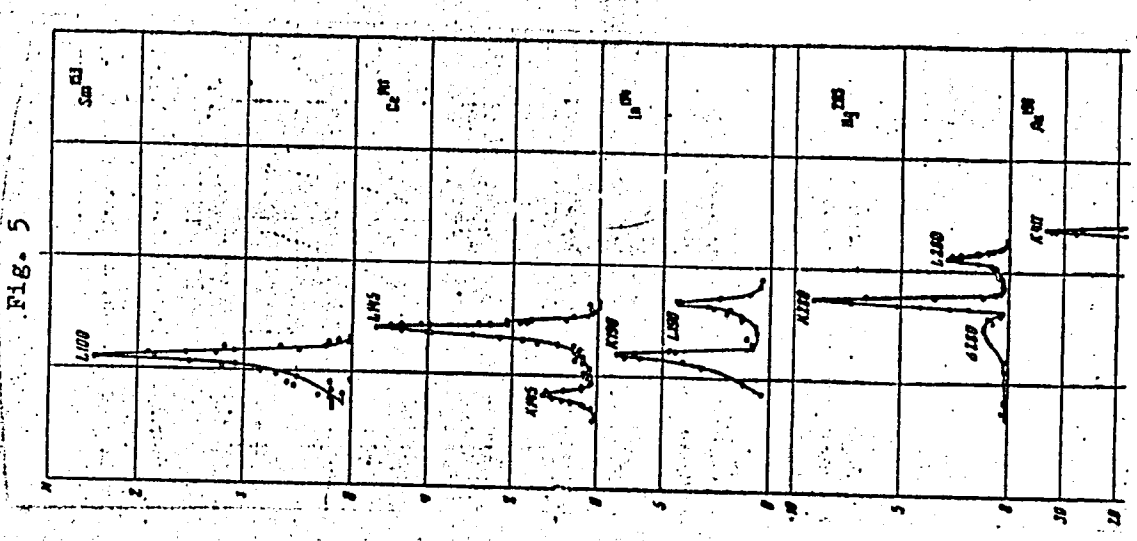

Fig. 5

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BC29/B060

Photorhytron

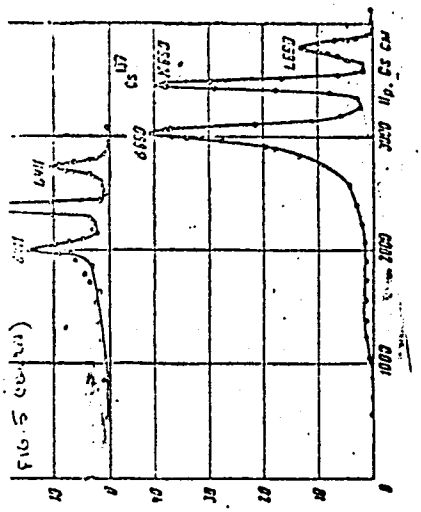


Fig. 6

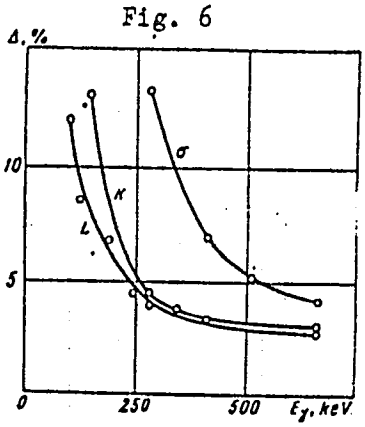
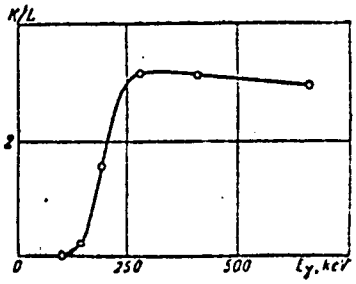


Fig. 7



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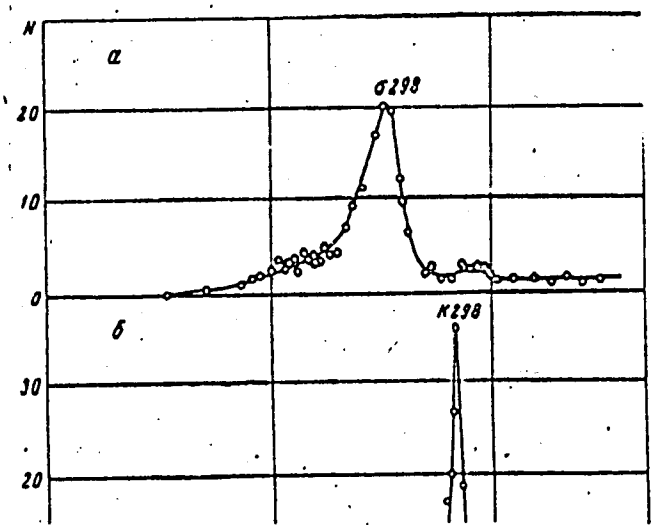
89251

S/048/61/025/001/017/031
B029/B060

Photorhytron

Fig. 10



Card 10/11

89251

S/048/61/025/001/017/031
B029/B060

Photorhytron

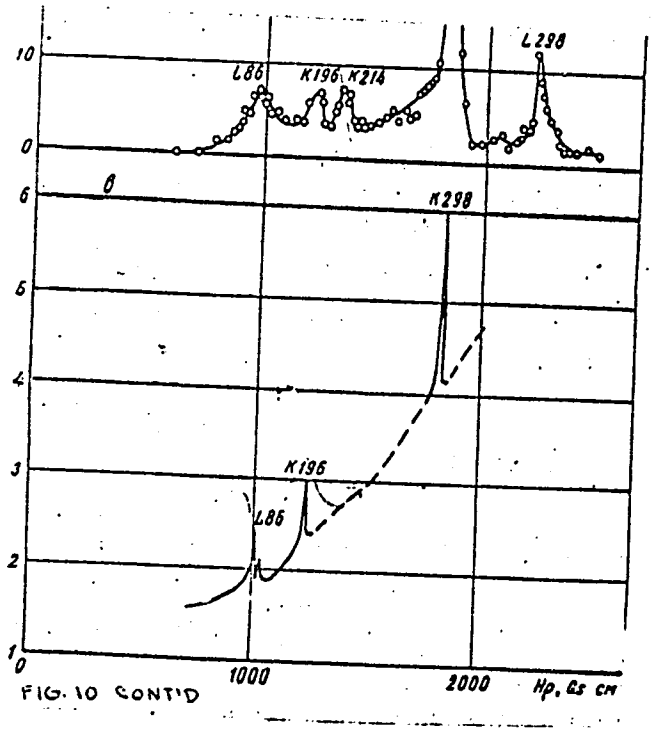


FIG. 10 CONT'D

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BASINA, A.S.; GROMOV, K.Ya.; DZHELEPOV, B.S.; MOROZOV, V.A.

Spectrum of the conversion electrons of the holmium fraction in the reaction Ta + p. Izv. AN SSSR. Ser. fiz. 25 no.2:194-198 F '61. (MIRA 14:3)

(Holmium--Isotopes)
(Tantalum)
(Nuclear reactions)

VITMAN, V.D.; VOINOVA, N.A.; DZHELEPOV, B.S.; KARAN, A.A.

Relative intensities of some γ-lines in the spectrum of Ta^{182}.
Izv. AN SSSR. Ser. fiz. 25 no.2:199-200 F '61. (MIRA 14:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D.I. Mendeleyeva i Fiziko-tekhnicheskiy institut AN SSSR.
(Tantalum—Spectra)

VITMAN, V.D.; DZHELEPOV, B.S.; KARAN, A.A.

Relative intensities of γ-rays from RaC in the 1300-2520 Kev energy range. Izv. A.N. SSSR. Ser. fiz. 25 no.2:201-206 F '61. (MIRA 14:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleyeva.

(Bismuch—Isotopes)
(Gamma rays)

S/048/61/025/002/007/016
B117/B212

AUTHORS: Voinova, N. A., Dzhelepov, B. S., Khol'nov, Yu. V.

TITLE: Gamma radiation of Ta^{182}

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 2, 1961, 233-236

TEXT: The present paper was read at the 11th Annual Conference on Nuclear Spectroscopy (Riga, January 25 to February 2, 1961). The authors have investigated the gamma spectrum of Ta^{182} in a wide energy range by using a "ritron" and "photoritron". The source was a 2.8 g tantalum foil activated by neutrons. Its activity amounted to about 2 curies. Fig. 1 shows the photoelectron spectrum of a bismuth target that had been bombarded with gamma rays of Ta^{182}, recorded by means of the photoritron. The relative intensities of soft gamma rays are given in the last column of the table; they have been determined from the relative intensity of the photopeaks. The correction for the absorption of gamma rays have been made in the source and in the input slit. Besides, also the sensitivity of the instrument was

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considered on these corrections. Composite lines are separated into singular components with the help of standard lines. The results obtained agree well with data given in Refs. 3 and 5, but differ very much from those given in Refs. 4 and 6. The hard region of the spectrum was investigated by means of a ritron. After the corrections had been introduced, the intensities of the hard lines were determined (Table). The resolution of the ritron, however, was not high enough to separate the gamma lines, as was done in Refs. 1 and 2. Therefore, the intensities of the hard lines determined with standard lines are not as accurately given as those in Refs. 1 and 2. Special attention had been paid to investigate the spectral region around 1,600 kev. It was found that in this region the number of coincidences does hardly exceed the background. The results of the study showed that if 1608.5-kev gamma quanta exist, their maximum intensity amounts to 0.05% of the 1121.6-kev line intensity. There are 3 figures, 1 table, and 10 references: 5 Soviet-bloc.

ASSOCIATION: Radiyevyy institut im. V. G. Khlopina Akademii nauk SSSR (Radium Institute imeni V. G. Khlopin of the Academy of Sciences USSR)

Gamma radiation of Ta^{182}

Legend to the table:
1) transition energy, kev;
2) relative intensities according to Müller, Murray, Bachström, O. Sumbayev, Fröman & Ryde, N. A. Voinova, V. D. Vitman and own measurements (last column).

Энергия перехода, kev	Относительные интенсивности							
	Мюллер и др. [3] (1952)	Мюррей и др. [4] (1955)	Бекстрём [7] (1956)	Сумбаев [5] (1957)	Фрёмен и Райде [6] (1957)	Воинова и др. [1] (1959)	Витман и др. [2] (1961)	Наши данные
65,71	2,6	7,5	—	—	—	—	—	—
67,74	28,4	85	—	—	130	—	—	—
84,67	1,7	5	—	—	(7)	—	—	—
100,00	13,1	40	—	—	52	—	—	15±7
113,66	2,6	7,5	—	—	(8)	—	—	—
116,40	0,4	1,7	—	—		—	—	—

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Gamma radiation of Ta^{182}

S/048/61/025/002/007/016
B117/B212

152,41	12,5	35	—	18,2	} 39 (29)	—	—	} 18±4
156,37	4,0	11,5	—	7,2	(10)	—	—	3
179,36	5,4	16	—	8,7	(12)	—	—	3±1
198,31	2,6	7,5	—	4,5	} 39 (6)	—	—	—
222,05	12,8	35	—	21,4	(25)	—	—	—
229,27	6,8	20	—	9,8	(14)	—	—	} 19±3
264,00	7,7	22	—	9,1	12	—	—	
892,4	—	—	—	—	—	<1,4	<0,5	8±1
927	—	—	—	—	—	3±2	—	—
960	—	—	—	—	—	2,5±1,5	—	—
1003	—	—	—	—	—	9±3	5±2	—
1046	—	—	—	—	—	—	0,9±0,9	—
							0,8	—
1121,6	100	100	100	100	100	100	100	100
1155	—	6,5	—	7,1	—	<4	3,6±1,0	—
1189,4	44,6	45	—	56,8	~21	45±8	44±3	43
1220,0	} 95	95	—	} 161	} 112,5 (75)	84±8	80±6	} 118
1231		50 } 145	—		(37,5)	35±10	25±5 } 105±8	
1254	—	—	4	—	—	6±2	4±1	—
1275	—	—	3	—	—	3±2	—	~4
1200	—	—	2	—	—	5±2	—	~4
1331	—	—	—	—	—	<0,6	—	(~1,5)
1375(+1388)	—	—	<0,3	—	—	<1,4	—	~2
1437	—	—	<0,3	—	—	<0,05	—	(~0,6)
1454	—	—	<0,3	—	—	—	—	(~0,4)
1608,5	—	—	—	—	—	—	—	<0,05

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BONCH-OSMOLOVSKAYA, N.A.; DZHELEPOV, B.S.; KRAFT, O.Ye.;
CHZHOU YUYE-VA [Chou Yueh-wa]

Positron spectra of the neutron-deficient isotopes of terbium and neodymium. Izv. AN SSSR. Ser. fiz. 25 no.7:826-831 Jl '61. (MIRA 14:7)

(Terbium--Spectra) (Neodymium--Spectra)
(Positrons)

GROMOV, K.Ya.; DZHELEPOV, B.S.; ZHELEV, Zh.T.; KUDRYAVTSEVA, A.V.

Study of β^+-spectra and conversion electron spectra in Tb^{152}. Izv. AN SSSR. Ser. fiz. 25 no.9:1084-1087 '61. (MIRA 14:8)

1. Ob"yedinennyy institut yadernykh issledovaniy i Leningradskiy gosudarstvennyy universitet im. A.A. Zhdanova.
(Terbium—Spectra)
(Internal conversion(Nuclear physics))

ANTON'YEVA, N.M.; DZHELEPOV, B.S.

Internal conversion coefficients of certain nuclear transitions in Yb^{171}. Izv. AN SSSR. Ser. fiz. 25 no.9:1088-1091 '61. (MIRA 14:8)

1. Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo gosudarstvennogo universiteta im. A.A. Zhdanova.
(Ytterbium—Isotopes)
(Internal conversion(Nuclear physics))

GAN MEN-KHUA [Kang Meng-hua]; GROMOV, K.Ya.; DZHELEPOV, B.S.; ZVOL'SKA, V.; ZVOLSKIY, I.

Conversion electrons from Tu^{165}. Izv. AN SSSR. Ser. fiz. 25 no.9:1092-1095 '61. (MIRA 14:8)
(Thulium--Isotopes)
(Internal conversion(Nuclear physics))

ABDURAZAKOV, A.A.; GROMOV, K.Ya.; DZHELEPOV, B.S.; KHALKIN, V.A.

Conversion electrons from erbium fractions. Izv. AN SSSR. Ser. fiz. 25 no.9:1096-1100 '61. (MIRA 14:8)

1. Srednеaziatskiy politekhnicheskiy institut i Ob"yedinennyy institut yadernykh issledovaniy.
(Erbium—Isotopes)
(Internal conversion(Nuclear physics))

VIZI, I.; GROMOV, K.; DZHELEPOV, B.; YAZVITSKIY, Yu.

Decay mode of Eu^{147}. Izv. AN SSSR. Ser. fiz. 25 no.9:1101-1104 '61. (MIRA 14:8)

1. Ob"yedinennyy institut yadernykh issledovaniy i Radiyevyy institut im. V.G. Khlopina AN SSSR.
(Europium—Decay)

GRIGOR'YEV, Ye.P.; GROMOV, K.Ya.; DZHELEPOV, B.S.; ZHELEV, Zh.T.; ZVOL'SKA, V.; ZVOL'SKIY, I.

Decay of $Yb^{166} \rightarrow Tu^{166} \rightarrow Er^{166}$. Izv AN SSSR.Ser.fiz. 25 no.10:1217-1227 O '61. (MIRA 14:10)

1. Leningradskiy gosudarstvennyy universitet im. A.A.Zhdanova, Ob"yedinennyy institut yadernykh issledovaniy.
(Ytterbium—Decay) (Thulium—Decay) (Erbium—Decay)

DZHELEPOV, B.S.; ZVOL'SKIY, I.; SERGIYENKO, V.A.

Coincidences between conversion electrons produced in the decay of $Ho^{160} \rightarrow Dy^{160}$. Izv.AN SSSR.Ser.fiz. 25 no.10:1228-1245 O '61. (MIRA 14:10)

1. Leningradskiy gosudarstvennyy universitet im. A.A.Zhdanova, Ob"yedinennyy institut yadernykh issledovaniy.
(Holmium--Decay) (Dysprosium--Decay)

DZHELEPOV, B.S.; ZVOL'SKIY, I.; NIKITIN, M.K.; SERGIYENKO, V.A.

Coincidences between conversion electrons of the dysprosium fraction.
Izv.AN SSSR.Ser.fiz. 25 no.10:1246-1255 O '61. (MIRA 14:10)

1. Leningradskiy gosudarstvennyy universitet im. A.A.Zhdanova i Ob"yedinennyy institut yadernykh issledovaniy.
(Electrons--Spectra) (Dysprosium--Decay)

S/056/61/040/002/015/047
B102/B202

AUTHORS: Vitman, V. D., Voinova, N. A., Dzhelepov, B. S., Karan, A. A.

TITLE: 892.4-kev gamma transition in the W^{182} nucleus

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 40, no. 2, 1961, 479-482

TEXT: The authors present measurement results of the intensity of 892.4-kev gamma transition from the 1221.8-kev level to a level of the fundamental rotational band in W^{182}. The experimental results obtained for the $Ta^{182} \rightarrow W^{182}$ decay are illustrated in the decay scheme. The transitions B and C are well known. The present paper gives details concerning transition A. The 892-kev line has been known since 1950; its relative intensity (intens-

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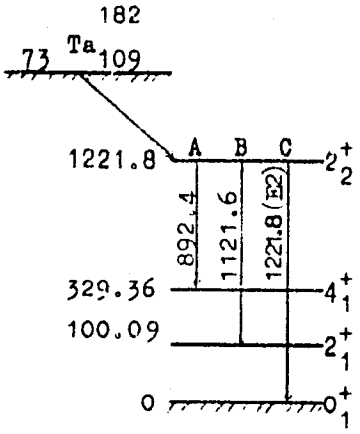
892.4-kev gamma ...



ity of the 892.4-kev gamma radiation referred to that of the 1221.8-kev gamma radiation) was found to be 0.017 or less. The following value was obtained by V. S. Gvozdev, L. I. Rusinov, and Yu. L. Khazov from the conversion electron spectrum: $K_{892.4}/K_{1221.8} \leq 0.02$; C. J. Gallagher et al. (Phys. Rev. 113, 1298, 1959) found a line with 894.7±0.8 kev ($T_{1/2}$ = 13 hr) of considerably higher intensity: $K_{894.7}/K_{1221.8}$ = 2:3 in $Re^{182} \rightarrow W^{182}$ decay. According to the authors, this line is too intense to be related to the 1221.8-kev level of W^{182}. To explain this problem, the ranges 850-910 and 1100-1250 kev of the gamma spectrum were studied by means a new magnetic spectrometer (Elotron) which had been built of the VNIIMa; this spectrometer is characterized by high sensitivity (1.2% in the

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range of 1 Mev) and low background. The recoil-electron spectrum is shown in Fig. 2. The results were entered without consideration of the background (which was constantly about 0.04 pulses per minute). $I(\gamma_{892.4})/I(\gamma_{1221.8}) \leq 0.006$ was obtained for the intensity ratio. On the basis of the theory of non-axial nuclei of A. S. Davydov et al., the authors then calculated the relative intensities of the 1221.8 and 1121.6 kev transitions. Using a formula by Davydov with $E(2_1^+) = 100.092$ kev and $E(2_2^+) = 1221.8$ kev, γ was found to be 11.40°. The following results were obtained:

892.4-kev gamma...

Intensity ratios for the transitions A, B, C from the 1221.8-kev level

Transition energy, kev	Experimental intensity ratio	Theoretical intensity ratios					
		acc. to Davydov		acc. to Alaga			
		$\gamma=11.40^0$	$\gamma=11.20^0$	K=0	K=1	K=2	
						without correction	with correction
892.4	≤ 0.6	3.8	3.7	53.6	23.8	1.46	3.2
1121.6	122	131	130	93.2	23.5	93.2	122
1221.8	100	100	100	100	100	100	100

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892.4-kev gamma...

According to the theory of axial nuclei by G. Alaga et al (Kong. Dan. Vid. Selsk.Mat.-fys.Medd. 29, 9, 1955), the intensity ratio of the transitions depends on the quantum number K of the 1221.8-kev level. The transition intensity ratios following from this theory are also shown in the table. The values for K=2 are in fairly good agreement with the measured values; those obtained for the 892.4-kev transition, however deviate largely. N. N. Zhukovskiy is mentioned. There are 2 figures, 1 table, and 17 references: 7 Soviet-bloc and 10 non-Soviet-bloc.

ASSOCIATION: Vsesoyuznyy institut metrologii (All-Union Institute of Metrology)

SUBMITTED: September 24, 1960

Card 5/6

BASKOVA, K.A.; DZHELEPOV, B.S.; KOMISSAROVA, Z.A.

Positron annihilation in sulfur, selenium, and silicon. Zhur. eksp. i teor. fiz. 40 no.4:1001-1003 Ap '61. (MIRA 14:7)

1. Leningradskiy gosudarstvennyy universitet.
(Positrons) (Quantum theory)

DZHELEPOV, B.S.; IVANOV, R.B.; NEDOVESOV, V.G.

α-Decay of Pu^{239}. Zhur. eksp. i teor. fiz. 41 no.6:1725-1728 D '61. (MIRA 15:1)

1. Radiyevyy institut AN SSSR.
(Plutonium--Decay)

VITMAN, V. D.; VOINOVA, N. A.; DZHELEPOV, B. S.

Relative intensities of the Ir^{194} β^--line in the 860-2130 Kev. energy range. Izv. AN SSSR. Ser. fiz. 16 no.12:1475-1479 D '62. (MIRA 16:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut meteorologii im. D. I. Mendeleyeva i Fiziko-tekhnicheskiy institut AN SSSR im. A. F. Ioffe.

(Iridium—Spectra)

S/048/62/026/001/012/018
B125/B102

AUTHORS: Grigor'yev, Ye. P., Dzhelepov, B. S., Zvolska, V., Zolotavin, A. V., Malysheva, T. V., Khotin, E. A., and Adam, I.

TITLE: Conversion electrons of the short-lived platinum and tungsten isotopes

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 1, 1962, 120 - 124

TEXT: The conversion electron spectra of the platinum and the tungsten fractions were measured by a β-spectrometer with double focusing by the method of nuclear resonance in the intervals 68 - 106 kev, and 70 - 90 kev, respectively. The neutron-deficient platinum and tungsten isotopes were produced by bombarding gold with 660-Mev protons. Table 1 gives the parameters of the 16 lines obtained for the platinum fraction. 7 of these lines have been newly discovered. The 106.43-kev transition cannot be attributed to one of the Pt isotopes but only to an Ir isotope. The intensity ratio of the lines L_{II} and L_{III} suggests an E2 or E3-type transition. Also for the 110.10-kev transition in an iridium nucleus

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Conversion electrons of the...

the isotope on whose decay transition takes place cannot be determined due to its insufficiently accurate half line. The L_I, L_{II}, L_{III} lines with the energies 96.71, 97.25 and 98.87 kev of the 110.10-kev transition have a half life of (20±0.5) hr. The ratio of the line intensities of inner conversion on the L-subshells suggests a transition of type E1 or E2+M1. Also the 93.94-kev transition mentioned in 1960 at the X Soveshchaniye po yadernoy spektroskopii (Tenth Congress on Nuclear Spectroscopy) in Moscow takes place in an iridium nucleus The three conversion lines with the half life (2.6±0.6) hr and the energies 72.4, 74.3, and 83.2 kev which the authors studied in the 70 - 90-kev spectral range belong to the decay of W^{176} or W^{177} The first two lines are M- and N-lines of the 74.9-kev transition in Ta The intensities of the (L_I+L_{II}), L_{III}, M, and N conversion lines of the well-known transition with hν = 88.35 kev ($2^+ \rightarrow 0^+$) in Hf^{176} initially increase with the half life (2.5±0.4) hr and then decrease with the half life 8 hr of Ta^{176}. The half life 2.5 hr of W^{176} obtained by the author differs essentially from the value obtained by G. Wilkinson. There are 2 figures, 2 tables,

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and 3 references: 2 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: G. Wilkinson, Phys. Rev., 80, 495 (1950).

ASSOCIATION: Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo gos. universiteta im. A. A. Zhdanova (Scientific Research Institute of Physics of Leningrad State University imeni A. A. Zhdanova). Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research). Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo (Institute of Geochemistry and Analytical Chemistry imeni V. I. Vernadskiy)

Table 1. Energies and half lives of the intensity decrease of some conversion lines of the platinum fraction.
Legend: (1) $T_{1/2}$(hr); (2) identification; (3) isotope.

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34167
S/048/62/026/002/001/032
B104/B102

24.6200

AUTHORS: Dzhelepov, B. S., Medvedev, A. I., Uchevatkin, I. F., and Shestopalova, S. A.

TITLE: Spectrum of conversion electrons of the lutecium fraction with energies exceeding 1000 kev

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 2, 1962, 162-181

TEXT: The lutecium fraction was separated from a Ta target irradiated with 660-Mev protons for 2-4 hr. A new β-spectrometer with double focusing was used to study the spectrum in the 1020-3200 kev interval. Owing to the finite source thickness, the line half-widths were found to range between 0.22 and 0.29%. Lines of Lu^{169} (34 hr), Lu^{170} (2 days), Lu^{172} (6.7 days), and Lu^{174} were detected. The decay energies of the isotopes Yb^{169}, Lu^{171}, and Lu^{174}, contained in the preparation, were smaller than 1 Mev. The energies of lines were determined with the aid of

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Spectrum of conversion ...

the known lines of Lu^{172} (K909.9, K and L 1095) and Lu^{170} (K1453.3, K1483.0, and K2039.0). The error of energy determinations lies between 0.3 and 0.2%. The Lu^{172} spectrum (Table 1) was studied in the 1020-1970 kev interval, 22-25 days after separation. After this period, the activity of Lu^{170} had practically vanished. Two days after separation, the spectrum of Lu^{169} + Lu^{170} was measured in the 1040-3200 kev interval through a period of six or seven days. The broad maximum between the known lines K1452 and K1481 is ascribed to transitions possessing energies of 1465 and 1469 kev. The very broad maximum between the two known L lines of the 1452 and 1481 kev transitions is ascribed to K lines of weak transitions with 1515.0 and 1517.4 kev. A new conversion line with an electron energy of 1550 kev is considered to be a K conversion line of 1611 kev transition. Other newly detected lines are: K1636, K1660, K1680, K1692, and K1709. The K1860 line is attributed to Lu^{169}. Nine very intense lines of Lu^{170} have been detected which belong to transitions

Card 2/

Spectrum of conversion ...

of 2655, 2684, 2700, 2740, 2775, 2836, 2872, 2930, and 2955 kev. Z. Playner et al. (Materialy III Soveshchaniya po neytronodefitsitnym izo- pam, 1, 23, 32, Dubna, 1960) is mentioned. The authors thank the Board of Directors of the OIYaI and K. Ya. Gromov for supplying the sources, I. A. Pavlova, K. M. Shperling, V. D. Vitman, and A. A. Karan for assis- with measurements. There are 17 figures, 3 tables, and 11 references: Soviet and 5 non-Soviet. The four most recent references to English-lan guage publications read as follows: Harmatz B., Handley T. H., Mihelich J. W., Phys. Rev., 119, 1345 (1960); Mihelich J. W., Harmatz B., Handley T. H., Phys. Rev., 123, 1758 (1961); Wilson R., Pool M., Phys. Rev., 118, 1067 (1960); Harmatz B., Handley T., Mihelich J., Phys. Rev., 114, 1082 (1959).

Table 1. Conversion electrons of Lu^{172}. Legend: (1) Consecutive number; (2) present paper; (3) conversion electron energy, kev; (4) relative intensity; (5) identification; (6) energy in kev.

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S/048/62/026/002/005/032
B101/B102

AUTHORS: ~~Dzhelepov, B. S.,~~ Zvol'skiy, I., Nikitin, M. K., and Sergiyenko, V. A.

TITLE: Coincidences between conversion electrons resulting from the Dy^{153} — Tb^{153} decay

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 2, 1962, 202-204

TEXT: The coincidences between conversion electrons of the transitions of 80.84 + 82.48; 99.7, and 147.5 + 149.0 kev with Dy^{153} electrons of 170-230 and 173.6 kev were studied (Figs. 1, 2). The Dy fraction was chromatographically separated from a tantalum target bombarded with 660-Mev protons. The sources contained Dy^{153} ($T_{1/2}$ = 6.4 hrs); Dy^{155} (10 hrs); Dy^{157} (8 hrs); Dy^{159} (144 days); Tb^{153} (2.3 days); and Tb^{155} (5 days). As the measurements with a double-lens beta-ray spectrometer began 18 hrs after the irradiation of the Ta target and took about 15 hrs, the short-lived Dy isotopes with $A < 153$ had already decayed. The Dy

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preparation was precipitated onto a slightly aluminized collodion film. It is concluded from the experimental data that the 80.8-, 163.3-, and 253.3-kev levels excited in the Dy^{153} decay do exist in Tb^{153}.
Ye. N. Rozhin, K. Ya. Gromov, and V. A. Khalkin are thanked for assistance.
There are 3 figures, 1 table, and 5 Soviet references.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research). Leningradskiy gos. universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov)

Fig. 1. Coincidences of L80.84 Dy^{153} + L82.48 Dy^{153} + L83.01 Dy^{157} electrons. Broken line: spectrum of conversion electrons, recorded by one half of the spectrometer. Continuous line: count rate of coincidences.

Legend: abscissa: Hρ, oe·cm. Ordinate: left: $N_{single} \cdot 10^{-3} \cdot min^{-1}$; right: $N_{coinc} \cdot 10^{-2}\ hr^{-1}$.

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Coincidences between conversion...

Fig. 2a. $N_{sinlge} \cdot 10^{-4}$ min^{-1} as a function of $H\rho$.

Fig. 2b. spectrum of conversion electrons. Diagram (a): coincidences of K99.7 electrons of Dy^{153}; diagram (б): coincidences of L80.84 + L82.46 electrons of Dy^{153} + L83.01 electrons of Dy^{157}; diagram (в): coincidences of K147.5 + K149.0 + L99.7 electrons of Dy^{153}.

Legend: abscissa: Hρ, oe·cm; ordinate of diagrams (a), (б), and (в): $N_{coinc} \cdot hr^{-1}$.

Card 3/4

S/020/61/136/002/014/034
B019/B056

AUTHORS: Grigor'yev, Ye. P., Gromov, K. Ya., Dzhelepov, B. S., Corresponding Member of the AS USSR, Zvol'ska, V., Zolotavin, A. V., Veys, M., and Van Yun-yuy

TITLE: The Decay of the Two-hour Isotope Lu^{168}

PERIODICAL: Doklady Akademii nauk SSSR, 1961, Vol. 136, No. 2, pp. 325-328

TEXT: In the lutetium fraction forming in the course of an irradiation of tantalum with 660-Mev protons, conversion lines were discovered, which had a period of two hours. The authors investigated the lutetium isotope to which these lines belong. For this purpose they used a β-spectrometer with double focusing, the magnetic field was measured by means of proton resonance, and calibration was carried out according to exactly known lines. Recording was carried out by means of two Geiger-Müller counters. Three conversion lines with a period of (2.15 ± 0.20) hours were discovered; closer details are given in Table 1. By comparing the energy differences between these three lines with X-ray data, it was found that the Lu-isotope goes over into an ytterbium isotope. From the close study

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The Decay of the Two-hour Isotope Lu^{168}

S/020/61/136/002/014/034
B019/B056

of the known Lu-isotopes, of their decays, and their spectra, the authors come to the conclusion that the required isotope with a period of 2.15 hours must be $_{71}Lu^{168}$, which has an odd-odd deformed nucleus. Fig. 3 shows the decay scheme of this isotope. There are 3 figures, 3 tables, and 5 references: 4 Soviet and 1 US.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova (Leningrad State University imeni A. A. Zhdanov)
Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: October 6, 1960

Card 2/5

The Decay of the Two-hour Isotope Lu^{168}

S/020/61/136/002/014/034
B019/B056

Таблица 1

Конверсионные линии 2-часового лютеция

1 $H\rho$, гаусс·см	2 E_γ, кэв	3 Идентификация	4 Энергия перехода, кэв	
974,1	77.54	L_{II}	87,52	87,54± ±0,04*
981,4	78,64	L_{III}	87,58	
1030,5	87,03	N_I	87,52	

* Учтена возможная систематическая погрешность.

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The Decay of the Two-hour Isotope Lu^{168}

S/020/61/136/002/014/034
B019/B056

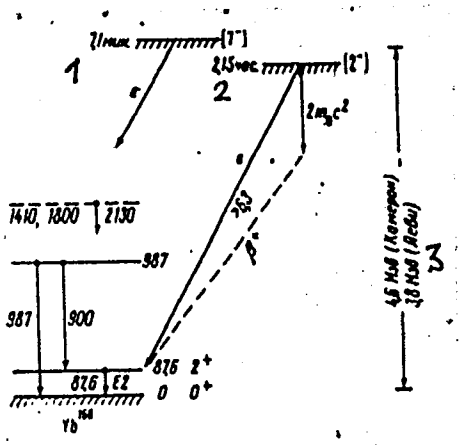

Рис. 3. Схема распада Lu^{168}

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The Decay of the Two-hour Isotope Lu^{168}

S/020/61/136/002/014/034
B019/B056

Legend to Table 1: Conversion lines of the two-hours isotope: 1) H_ρ in gauss.cm. 2) Energy of the lines, kev. 3) Identification. 4) Transition energy, kev.
Legend to Fig. 3: Decay scheme of Lu^{168}: 1) 7.1 minutes. 2) 2.15 hours. 3) 4.6 Mev (according to Cameron), 3.8 Mev (according to Levi).

Card 5/5

S/048/60/024/007/032/032/XX
B104/B201

AUTHORS: Vitman, V. D., Dzhelepov, B. S., Pavlov, A. A., Semenov, S. V., and Shestopalova, S. A.

TITLE: Determination of the ratio of the number of quanta of K- and L emission of some neutron-deficient isotopes

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 24, no. 7, 1960, 934-938

TEXT: The present paper has been read at the 10th All-Union Conference on Nuclear Spectroscopy, Moscow, January 19-27, 1960. A proportional counter served to measure the relative intensities of the K- and L emissions of Ho^{160}, Dy^{159}, $Nd^{140} + Pr^{140}$, and Sm^{145}. These isotopes were obtained by the chromatographic separation of rare earths, the latter being chemically separated from a tantalum target irradiated with 660-Mev protons on the synchrocyclotron of the OIYaI. The experimental system was calibrated on Zn^{65}, Se^{75}, In^{114}, Cs^{137}, and Sm^{145}, the relative half-widths of the lines being 15-12%. The ratio of the numbers of L- and K emission quanta is put

Determination of the ratio of ...

proportional to the ratio of the area of the lines measured: $N_L/N_K = kS_L/S_K$. (N_L and N_K are the numbers of quanta, S_L and S_K the areas bounded by the line contours). The S_K and S_1 were found from the lines determined experimentally after deduction of the background. The latter was determined by means of a filter made of 0.8 mm cadmium, 0.5 mm copper, and 0.5 mm aluminum. Quanta up to 60 kev were completely absorbed by this filter, quanta with more than 200 kev were allowed to pass. Results are collected in Table 1. With the aid of these values, the ratios λ_L/λ_K between the capture probabilities of the electrons from L- and K shells were calculated. These values are given in Table 2. It is noted, however, that they exhibit a considerable error. There are 1 figure, 2 tables, and 8 references: 4 Soviet-bloc and 4 non-Soviet-bloc.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleyeva(All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleyev)

Determination of the ratio of ...

Legend to Table 1: Determination of the ratio of N_L/N_K. 1, isotope; 2, efficiency of counter in %; 3, contribution of radiation incident upon the counter.

1) Изотоп	s_L/s_K	2) Эффективность счетчика, %	
		ε_L	ε_K
$Nd^{140}+Pr^{140}$	2,20±0,12	90,75±0,03	2,18±0,05
Sm^{155}	3,8±0,5	95,17±0,11	1,78±0,07
Dy^{159}	8,7±0,5	95,7±0,3	1,28±0,07
Ho^{160}	7,6±1,1	95,1±0,3	1,21±0,08

Card 3/7

Determination of the ratio of ...

Доли излучения, попавшего в счетчик, %			
Π_K	Π_L	$K = \frac{\Pi_K \varepsilon_K}{\Pi_L \varepsilon_L}$	$N_L : N_K$
98,7±0,1	25,1±1,6	0,086±0,09	0,19±0,03
98,9±0,1	37,7±2,0	0,047±0,005	0,18±0,04
99,0±0,1	55,8±2,0	0,246±0,022	0,21±0,04
92,6±0,2	16,1±0,7	0,073±0,008	0,56±0,15

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Determination of the ratio of ...

Legend to Table 2: Determination of the ratio λ_L/λ_K. 1, isotope; 2, number of vacancies forming in the L-shell if one of the vacancies in the K-shell is occupied; 3, and 4, fluorescence yields; 5, and 6, number of conversion electrons hitting the counter per decay; 7, note: (a) no intensive gamma transitions, (b) W_K and W_L, data calculated according to Brosi et al. (Phys. Rev., 113, 239 (1959)), (c) W_K and W_L calculated according to data by Brosi et al. (Phys. Rev. 116, 98 (1959)), (d) W_K and W_L calculated according to data by Grigor'yev et al. (Izv. AN SSSR. Ser fiz., 23, 868 (1959)), (e) the following values were used in the calculation of λ_L/λ_K for Nd^{140}: β^- = 53%, K = 41%, and L = 6%.

Card 5/7

DZHELEPOV, B.S.; YEMEL'YANOV, B.A.; KUPRIYANOVA, K.P.; PODKOPAYEV, Yu.N.

γ-Spectrum of La^{140} in the energy range of 2300 to 3900 Kev. Zhur. eksp. i teor. fiz. 38 no.1:282-284 Jan '60. (MIRA 14:9)

1. Leningradskiy gosudarstvennyy universitet.
(Lanthanum--Isotopes)

ABDURAZAKOV, A.A.; ABDURAZAKOVA, F.M.; GROMOV, K.Ya.; DZHELEPOV, B.S.; UMAROV, G.Ya.

Studying the spectrum of conversion electrons in neutron-deficient lutecium isotopes. Izv. AN Uz.SSR. Ser. fiz.-mat. nauk 3:53-60 '61. (MIRA 14:8)

1. Sredneaziatskiy politekhnicheskiy institut i Ob"yedinennyy institut yadernykh issledovaniy.
(Lutecium--Isotopes) (Electrons--Spectra)

ANTON'YEVA, N.M.; BASHILOV, A.A. [deceased]; DZHELEPOV, B.S.; KAUN, K.G.
MEYYER, A.F.A.; SMIRNOV, V.B.

Radiation from Eu ^{145}, Eu ^{146} and Eu ^{147}. Zhur. eksp. i teor. fiz. 40 no.1:23-28 Ja '61. (MIRA 14:6)

1. Fizicheskiy institut Leningradskogo gosudarstvennogo universiteta.
(Europium--Isotopes) (Isotope separation)

DZHELEPOV, B. S.

S/048/62/026/001/011/018
B125/B102

AUTHORS: Wang Fu-chün, Vizi I., Gromov, K., Dzhelepov, B., Zhelev, Zh., Kudryavtseva, A., and Yazvitskiy, Yu.

TITLE: Eu^{149} decay scheme

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 1, 1962, 114 - 119

TEXT: The authors continued to study the spectrum of Eu^{149} conversion electrons ($T_{1/2}$ = 90 days) by means of a β-spectrometer with triple focusing of the beam (B. S. Dzhelepov et al., Preprint OIYaI, P-587. Dubna, 1960). The europium preparation was separated from a target irradiated by 660-Mev protons on the synchrocyclotron of the OIYaI. Three months after the irradiation the lines Eu^{147} ($T_{1/2}$ = 25 days), Eu^{148} (58 days), Eu^{149} (~90 days), Gd^{146} (45 days), Gd^{151} (120 days), and Gd^{153} (240 days) were observed. The specimens contained a small amount of gadolinium impurities. Besides an intense X-ray line the Eu^{149} spectrum

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S/048/62/026/001/011/018
B125/B102

Eu^{149} decay scheme

shows the groups with 256 - 279, 330 - 352, and 508 - 530 kev with a half life of (90 ± 20) days. The strong conversion line with ~20 kev has a half life of ~100 days. It is mainly due to Eu^{149} and to a lesser degree to gadolinium impurities. A measurement made with a single counter after purifying the europium preparation from gadolinium showed that the relative intensity of the above lines with 20.2 kev, and the relative intensities of the additional 14.3-kev and K279 lines of Eu^{149} were the same as before the purification. This proves that the 14.3- and 20.2-kev lines (L- and M-lines of the 22-kev transition) belong to Eu^{149}. The parameters of the Eu^{149} conversion electrons are given in the Table. Fig. 2 shows the Eu^{149} decay scheme suggested by the presence of three 22-kev transitions and that of a γ-transition with 22 kev. It was verified by studying the γ-spectrum and some spectra of the γ-coincidences on Eu^{149} decay by means of a scintillation γ-spectrometer. This instrument is based on the fast slow recording of the coincidences with summation. The coincidence circuit БДС-1 (BDS-1) operates at close

quantum energies in the cascade to be studied when the time resolution is $2 \cdot 10^{-7}$ sec and with a considerable difference of the quantum energies when the time resolution is $6 \cdot 10^{-7}$ sec. The 180- and 350-kev γ-rays observed with a time resolution of $2 \cdot 10^{-7}$ sec in the γγ-coincidences spectrum and the lacking of coincidences of 256- and 279-kev γ-rays confirm the decay scheme shown in Fig. 2. No cascade was found to start from 352 kev. In some experiments with reduced time resolution of $6 \cdot 10^{-7}$ sec the 509 - 530, 330 - 352, 250 - 279 and 178-kev γ-rays coincide with X-rays. Besides, a coincidence of 22-kev γ-rays with X-rays was observed. Owing to the observed coincidences with the X-rays the lifetime of the excited Sm^{149} levels shown in Fig. 2 is less than 10^{-6} sec. There are 8 figures, 1 table, and 3 Soviet references.

Fig. 2. Eu^{149} decay scheme.

Table. Data on Eu^{149} conversion lines.
Legend: (1) Conversion line observed; (2) relative intensity of conversion line; (3) results obtained by the authors.

BONCH-OSMOLOVSKAYA, N.A.; GROMOV, K.Ya.; DZHELEPOV, B.S.; KRAFT, G.Ye.; MALYSHEVA, T.V.; NIKITYUK, L.N.; KHOTIN, B.A.; CHZHOU YUYE-VA [Chou Yüeh-wa]; CHUMIN, V.G.

On the supposed isomer Ir^{186}. Izv. AN SSSR. Ser. fiz. 26 no.8:975-976 Ag '62. (MIRA 15:11)
(Iridium--Isotopes)

GROMOV, K.Ya.; DZHELEPOV, B.S.; ZVOL'SKA, V.; ZVOL'SKIY, I.; LEBEDEV, N.A.; URBANETS, Ya.

Decay scheme of Tu^{167}. Izv. AN SSSR. Ser. fiz. 26 no.8: 1019-1026 Ag '62. (MIRA 15:11)
(Thulium--Decay)

DZHELEPOV, B.S.; KATYKHIN, G.S.; MAYDANYUK, V.K.; FEOKTISTOV, A.I.

Spectra of internal conversion electrons and positrons emitted in Re^{184} decay. Izv. AN SSSR. Ser. fiz. 26 no.8:1030-1034 Ag '62. (MIRA 15:11)

(Rhenium--Decay) (Electrons--Spectra)

DZHELEPOV, B.S.; ROZHIN, Ye.N.; SERGIYENKO, V.A.

Coincidences of conversion electrons emitted in the decay of Lu^{174}. Izv. AN SSSR. Ser. fiz. 26 no.9:1154-1158 S '62. (MIRA 15:9)

(Lutetium—Decay)
(Internal conversion(Nuclear physics))

31767
S/056/61/041/006/006/054
B108/B138

24.6210

AUTHORS: Dzhelepov, B. S., Ivanov, P. B., Nedovesov, V. G.

TITLE: Alpha-decay of Pu^{239}

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 6(12), 1961, 1725-1728

TEXT: The authors studied the α-spectrum of Pu^{239} by means of a double-focusing magnetic α-spectrometer. Besides the wellknown α-lines, lines corresponding to transitions to the levels 104, 198, 224, 299, and possibly 243 kev have been detected. The measurements are given in Table 2. A decay scheme is suggested for Pu^{239} (Fig. 2). The authors thank L. L. Gol'din, G. I. Novikova, V. A. Belyakov, and V. N. Delayev for their help. There are 2 figures, 2 tables, and 9 references: 5 Soviet and 4 non-Soviet. The three references to English-language publications read as follows: D. Strominger et al. Table of Isotopes, UCRL, 1928, 1958; F. Asaro, I. Perlman. Phys. Rev., 88, 828, 1952; J. O. Newton. Nucl. Phys., 3, 345, 1957; 5, 218, 1958.

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31767
S/056/61/041/006/006/054
B108/B138

Alpha-decay of Pu^{239}

ASSOCIATION: Radiyevyy institut Akademii nauk SSSR (Radium Institute of the Academy of Sciences USSR)

SUBMITTED: June 12, 1961

Legend to Table 2: (1) number of the line, (2) level energy, kev, (3) transition intensity, per cent, (4) forbiddenness factor, (5) transition from Pu^{240} impurities to the 4^+ level of U^{236}, (6) impurity U^{233}.

№1 линии	Энергия 2 уровня, keV	Интенсивность 3 перехода, %	Коэффициент 4 запрета
α_0	1	72	1,7
α_1	13	17	6,1
α_2	51	11	5,7
α_3	84	0,038	950
α_4	104	0,030	1030
α_5 5	переход Pu^{240} на уровень 4^+ ядра U^{236}		
α_6	150	0,018	800
α_7	170	0,008	1290
α_8	198	0,008	860
α_9	224	0,008	580
α_{10}	243?	~0,003	~1200
α_{11}	299	0,004	360
α_{12} 6	примесь U^{233} (основной переход)		
α_{13}	424	0,007	30

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DZHELEPOV, B.S.; ROGACHEV, I.M.

Determining the multipolarity of transitions in Yb^{171} at an energy of 19.3 Kev. Vest. LGU 17 no.4:56-58 '62. (MIRA 15:3)
(Ytterbium--Spectra)

GRIGOR'YEV, Ye.P.; DZHELEPOV, B.S.; ZVOL'SKA, V.; ZOLOTAVIN, A.V.; MALYSHEVA, T.V.; KHOTIN, B.A.; ADAM, I.

Conversion electrons from short-lived platinum and tungsten isotopes. Izv. AN SSSR. Ser. fiz. 26 no.1:120-124 Ja '62. (MIRA 15:2)

1. Nauchno-issledovatel'skiy fizicheskiy institut Leningradskogo gosudarstvennogo universiteta im. A.A.Zhdanova, Ob"yedinennyy institut yadernykh issledovaniy i Institut geokhimii i analiticheskoy khimii im. V.I.Vernadskogo.
(Electrons)
(Platinum—Isotopes)
(Tungsten—Isotopes)

40091
S/048/62/026/008/001/028
B141/B108

26.2541

AUTHORS: Bonch-Osmolovskaya, N. A., Gromov, K. Ya., Dzhelepov, B. S., Kraft, O. Ye., Malysheva, T. V., Nikityuk, L. N., Khotin, B. A., Chou Yüch-wa, and Chumin, V. G.

TITLE: The predicted isomer Ir^{186}

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 8, 1962, 975-976

TEXT: Positrons with an intensity decrease of $T_{1/2} \sim 2$ hrs were discovered in a spectrometric investigation of an iridium fraction obtained from a gold target irradiated by 660-Mev protons. The positron spectrum consisted of five components (end-point energies 3400, 2600, 1930, 1300, ~800 kev; relative intensities 1, 20, 44, 12, 22). The conversion electron spectrum of the same Ir fraction had two lines (M 137, N 137). The I(t) of these lines curve could not be attributed to a single halflife. M 137 consists of two components, one with $T_{1/2} = 15 \pm 1$ hrs and one with 1.7 ± 0.2 (Ir^{186}) which is, within the limits of error, equal to the

Card 1/2

The predicted isomer Ir^{186}

S/048/62/026/008/001/028
B141/B108

$T_{1/2}$ = 2.0 ± 0.3 of the positron spectrum. As no positron-active Ir isotope with $T_{1/2}$ ~2 hrs is known so far, the authors assume that this halflife pertains to a new isomer Ir^{186}. There is 1 figure.

Card 2/2

40098
S/048/62/026/008/009/028
B104/B102

24.6300

AUTHORS: Gromov, K. Ya., Dzhelepov, B. S., Zvol'ska, V., Zvol'skiy, I., Lebedev, N. A., and Urbanets, Ya.

TITLE: The Tu^{167} decay scheme

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 8, 1962, 1019 - 1026

TEXT: To improve the decay scheme of Tu^{167}, the γ-spectrum was studied with a single-crystal scintillation spectrometer having a 100-channel pulse-height analyzer, and the spectrum of the conversion electrons of Tu^{167} with a double focusing β-spectrometer. The latter had a device for measuring the electric field by the proton resonance method for electron energies >56 kev; whereas for E_e <56 kev the magnetic field was measured with a probe. The Tu preparation was separated chromatographically from Ta which had been irradiated with 660-Mev protons. The results (Tables 1 and 2) deviate considerably from those of other authors and are considered to be the most accurate. After thoroughly studying the multiplicity of

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The Tu^{167} decay scheme

S/048/62/026/008/009/028
B104/B102

transitions in the Er^{167} nucleus, the decay scheme was plotted as in Fig. 5. There are 5 figures and 5 tables.

Table 1. Relative intensities of Tu^{167} γ-rays.
Legend: (1) E_γ, kev, (2) results, (3) K. Gromov, et al., Materialy III. Soveshchaniya po yadernoy spektroskopii. Preprint no. 613, Dubna, 1960, (4) H. Narasimhaian, M. L. Pool, Nucl. Phys., 21, 340 (1960).

(1)	(2)	(3)	(4)
Х,лучи+57	240±35		165
207,9	100	100	100
531,8	3,6±0,5	3,2±0,5	5,6
700	<0,15	(~0,8)	—
790	<0,15	2,3±1	—
880	<0,1	~1,1	—

Card 2/4 2

S/048/62/026/008/012/028
B104/B102

AUTHORS: Dzhelepov, B. S., Katykhin, G. S., Maydanyuk, V. K., and Feoktistov, A. I.

TITLE: The spectrum of internal conversion electrons and positrons emitted in the Re^{184} decay

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 8, 1962, 1030 - 1034

TEXT: This spectrum was studied on the ketron of Kiyev University, using a spectrometer with a particularly weak background. The source was separated from a tungsten foil irradiated with 13.6-Mev deutérons. The K783 1-kev line detected by B. Harmatz et al. (Phys. Rev., 123, 1758 (1961)) was not found in the hard part of the spectrum (Fig. 2) because of insufficient resolution. On the other hand the K788 line was found, which is absent from the Harmatz spectrum because of insufficient intensity. Harmatz observed the K 1106 line, but not K 1098 which has about the same intensity as the first-mentioned. The weak continuous electron spectrum appears distinctly in the range of 300 - 600 kev and disappears at 900 kev.

Card 1/2

S/048/62/026/008/012/028
The spectrum of internal conversion ... B104/B102

The spectrum is assumed to originate during the decay of Re^{184} into Os^{184}. A weak positron spectrum was also found. Its end-point energy is at about 1500 kev. The decay energy is assumed to be greater than 1320 kev. There are 4 figures and 1 table.

Card 2/6 2

S/048/62/026/012/004/016
B117/B186

AUTHORS: Vitman, V. D., Voinova, N. A., and Dzhelepov, B. S.

TITLE: Relative intensities of Ir^{194} γ-lines in the 860 - 2130 kev energy range

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 12, 1962, 1475-1479

TEXT: The γ-spectrum of Ir^{194} was investigated using the Elotron. This instrument has practically no background and its spectral sensitivity is well known, viz. with 4% accuracy in the 1150 - 2150 kev range. 4 radioactive sources, each of 20 - 30 curies, were provided by spectroscopically pure iridium powder, activated by a neutron flux of $5 \cdot 10^{13} - 10^{14}$ $cm^{-2} sec^{-1}$ in the FTI reactor and mixed with graphite. 23 γ-lines were found in the range investigated, the 1569 kev line being observed for the first time. A decrease in its intensity with a half-life of 18 $\pm$ 4 hr confirmed it as an Ir^{194} line. The peak observed near 1800 kev was interpreted as the sum of two γ-lines, $h\nu$ = 1786 and 1808 kev.

Card 1/3

Relative intensities of Ir^{194} γ-lines ...

Energies and the relative intensities determined were compared with the results of H. Johns and S. Nablo (Phys. Rev. 96, 1599, (1954)), and with those of I. Kern and G. Bäckström (Nucl. Phys., 19, 461 (1960)). The agreement is closer in the first case than in the second. The 70% divergence of the comparative values for the energy range above 1200 kev could be regarded as the result of a systematic error in the experiments carried out by Kern and Bäckström. Since apparently some of the values for the relative intensity given by these workers were incorrect, the multipole orders of the transitions they had determined were also checked and some of them recalculated. This paper was presented at the 12th Annual Conference on Nuclear Spectroscopy held in Leningrad from January 26 to February 2, 1962. There are 5 figures and 2 tables.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut metrologii im. D. I. Mendeleyeva (All-Union Scientific Research Institute of Metrology imeni D. I. Mendeleyev); Fiziko-tekhnicheskiy institut Akademii nauk SSSR im. A. F. Ioffe (Physicotechnical Institute of the Academy of Sciences USSR imeni A. F. Ioffe)

S/056/62/043/006/008/067
B184/B102

AUTHORS: Balalayev, V. A., Dzhelepov, B. S., Medvedev, A. I., Meshter, A., Uchevatkin, I. F.

TITLE: Refinement of the information on the $0^+ \longrightarrow 0^+$ transition in Ce^{140}

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 6(12), 1962, 2019-2020

TEXT: The Pr^{140} conversion electron spectrum was measured with a high-resolution β-spectrometer. As a result, more accurate data on the $0^+ \longrightarrow 0^+$ transition in Ce^{140} were obtained: energy: 1902 ± 3 kev, $(K/L)_{1902} = 7.40 \pm 0.34$. These values are well consistent with those obtained in earlier measurements and with the theoretical results. MIL = 0.27 ± 0.03; $(K+L+M)_{1597/\beta^+} \sim 1\%$; $(K+L+M)_{1902/\beta^+} \sim 0.1\%$. There are 1 figure and 1 table.

Card 1/2

Refinement of the information... S/056/62/043/006/008/067
B184/B102

ASSOCIATION: Vsesoyuznyy institut metrologii (All-Union Institute of Metrology)

SUBMITTED: June 30, 1961

Card 2/2

S/056/62/043/006/019/067
B102/B104

AUTHORS: Dzhelepov, B. S., Ivanov, R. B., Moskvin, L. N.

TITLE: Alpha decay of Ac^{225}

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 6(12), 1962, 2077 - 2079

TEXT: An actinium preparation was obtained by irradiating metallic thorium by 660-Mev protons from the OIYaI synchrocyclotron and subsequent chemical separation. The actinium was then evaporated in vacuo and deposited on a glass base. Its α-spectrum was measured with a magnetic α-spectrometer with double focusing. The results are in good agreement with those obtained by Perlman-Rasmussen (Alpha radioactivity) and Hagemann (Phys. Rev. 79, 534, 1950). The lines at 388 and 544 kev, detected for the first time, are attributed to the Fr^{221} nucleus. There are 2 figures and 1 table.

level	energy kev	intensity, %
α_0	0	54
α_1	37	30,7
α_2	98	8,1
α_3	107	2,1
α_4	148	0,95
α_5	194	2,9
α_6	222	0,5
α_7	252	0,6
α_8	274	0,08
α_9	341?	0,02
α_{10}	388	0,06
α_{11}	544	0,05

SUBMITTED: July 20, 1962

Card 1/1

DZHELEPOV, B.S.; VOYKHANSKIY, M.Ye.; MEDVEDEV, A.I.; UCHEVATKIN, I.F.

On the nature of the 531.8 Kev. level of Er^{167}.
Dokl. AN SSSR 146 no.4:789-792 O '62. (MIRA 15:11)

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(Erbium)
(Quantum theory)